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40 La Salle Street.

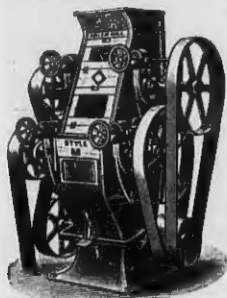


MILWAUKEE OFFICE,
124 Grand Avenue.

Published by
E. HARRISON CAWKER. Vol. 25, Nos. 5, 6. MILWAUKEE, SEPT. AND OCT., 1888.

TERMS: \$1.00 a Year in Advance
Single Copies, 10 Cents.

EDW. P. ALLIS & Co.

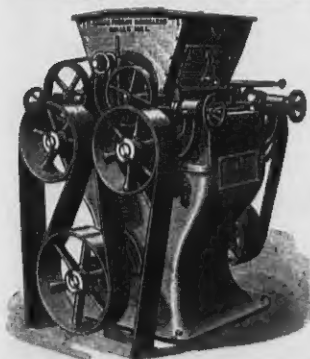
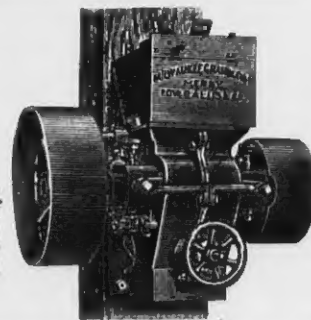


GRAY'S PATENT NOISELESS BELT ROLLER MILL.—Style M. FOR GRINDING CORN, FEED, RYE, ETC.

As the fall season approaches, many millers are commencing to plan for the winter campaign, and are looking about to find a machine for feed grinding which will produce the best results and can be thoroughly relied upon. This machine is **Guaranteed** to fill the bill in every particular. It is simply the well-known Gray Roller Mill, with all its virtues, so constructed as to produce two reductions by one operation. There are two sets of rolls, one placed a little higher and to one side of the other. It will pay you to write for descriptive pamphlet and price of this machine, if you intend purchasing a feed grinding outfit.

THE MILWAUKEE GRANULATOR. FOR GRINDING FEED, ETC.

This machine is a complete and perfect Roller Mill, of small size, and, as a result, small capacity. Its construction makes it very durable, easily managed and capable of doing good work with very little power. It is just the machine for a small capacity feed grinding outfit. A proof of its success is the rapidly increasing demand for it from all parts of the country.



Gray's Patent Noiseless Belt Roller Mills--Standard.

LICENSED BY THE CONSOLIDATED ROLLER MILL CO.

The Gray Rolls are so well known throughout the world, that it is unnecessary for us to comment upon their many virtues. Over 25,000 pairs are now in use, and the machines speak for themselves. We merely wish to call the attention of millers to "the old reliable" and say that, when you are in need of a perfect roll, we can furnish the Gray Machine, adapted to all requirements and conditions of grinding, and guarantee results.

RELIANCE WORKS, MILWAUKEE, WIS., U. S. A.

"GOLD SEAL" RUBBER BELTING,

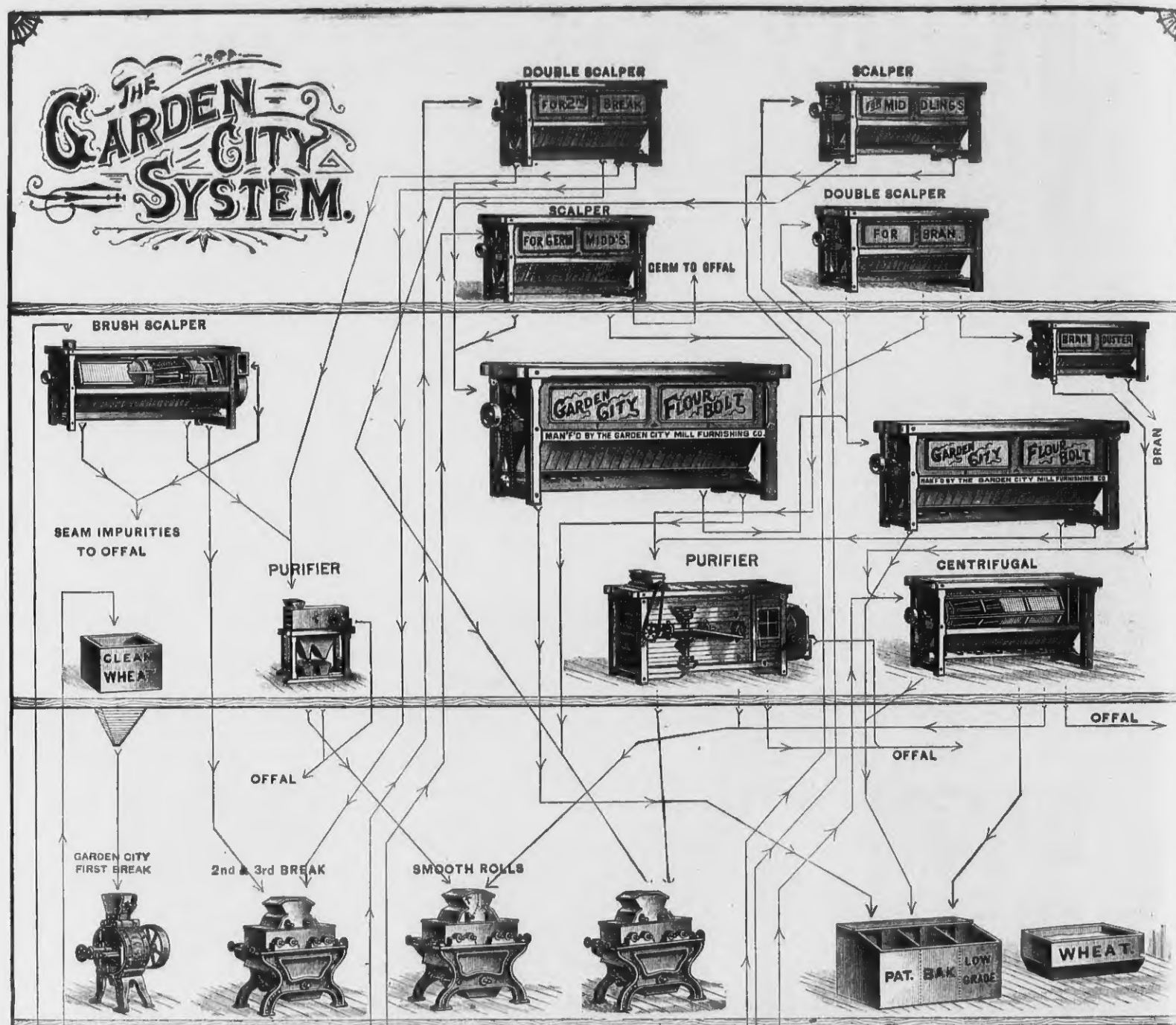


OAK TANNED LEATHER BELTING.

372 and 374 EAST WATER STREET,
MILWAUKEE.

181 EAST THIRD STREET,
ST. PAUL.

201 NICOLLET AVENUE,
MINNEAPOLIS.



PERSONAL LETTER:

We build the most perfect Mill in the country, after our own plans.

OR, We will build a Mill according to your own plans, if you prefer, and we will guarantee that the Mill will do as well as any other Mill on the same plan.

Our Machines are second to none, and better than most.

If our plan is adopted, we guarantee that it will do as well as any Mill; we make no exceptions.

Sometimes less money will buy a Single Machine, or an entire outfit less than we offer to sell at; but, we believe that quality should be considered with price, and when the former is taken into consideration, our prices will suit you.

Cut, illustrates the different Machines of our manufacture, besides our regular line of Wheat Cleaners—not illustrated.

We build every Machine that goes into a Flour Mill.

We also make up Bolting Cloths in a first-class manner.

Write for estimates, catalogues, etc.

GARDEN CITY MILL FURNISHING CO., CHICAGO, ILL.

P. S.—Several hundred Roller Mills, built by other manufacturers, have already been remodeled according to our plan with the best results.

The United States Miller



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THE DUNLAP BOLT.

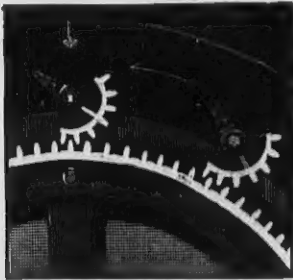
This invention differs, in many essential points, from all other flour bolts, or centrifugal reels, that have ever been offered to millers. Special attention is called to the following: The inside cylinder, to which is attached the beaters, or distributors; the simultaneous adjustment of all the beaters, or distributing blades; the positive feeding arrangement; the cloth stretching device; the brush for cleaning the cloth; the conveyors; the gearing; the design and appearance of the machine.

The inside cylinder is about four inches from the cloth surface, and is perfectly tight, preventing the material, to be bolted, from ever getting further than four inches from the cloth while in the reel. The beaters, or distributing blades attached to this cylinder, running within the narrow space between the cylinder and the cloth, keep the material out against

them out straight, as in cut "B," or inclining them forward, as in cut "C," the material will be carried higher up on the cloth, or carried over the top of the inner cylinder and distributed on the descending side of the reel.

The material to be handled is fed into the machine through a tight iron feed box, with a large iron screw conveyor, which will not and cannot clog or choke up, and drops into a wire basket which revolves with the cloth cylinder. Inside this wire basket is a blade that revolves with the inside cylinder. This breaks up dough balls, catches tacks, nails,

tion, carrying with it the light fluffy bran and other impurities, discharging them with the tailings as heretofore described. By this arrangement the fluff and fine specks are separated from the flour, instead of being forced through the cloth and mixed with the flour. The cloth is made up in one frame of ticking, the tail end having a heavy cord hemmed in the ticking, which effectually prevents it from slipping under the draw band that secures it to the tail of the reel. At the head, the cloth has a double fastening. It is first tacked to a stretching ring, which can be drawn out toward the head end of the machine with screws, and the cloth when sufficiently stretched is then secured on an inner stationary ring with a draw band same as at the tail end. The brush is at the top of the machine, a little to one side of the top of the cloth cylinder, and it is adjustable at the will of the miller. The conveyors are side by side with the celebrated "Slater Cut-off," the sim-

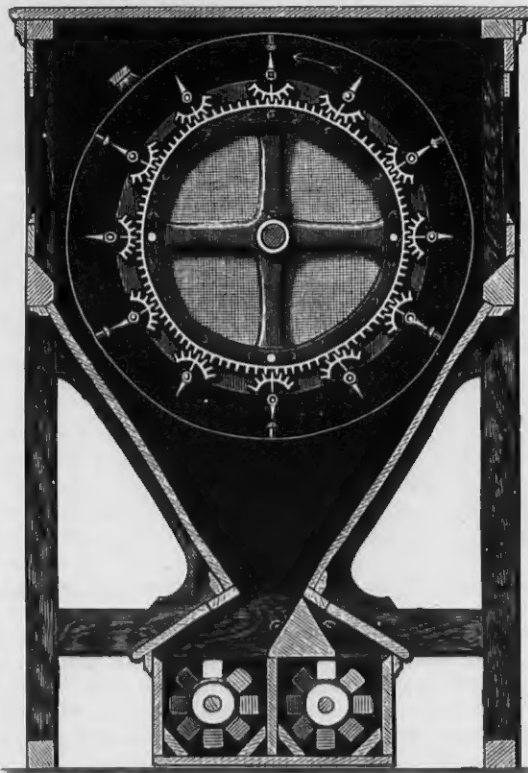


A

the cloth without a severe centrifugal action, as is necessary in ordinary centrifugal reels with open centers. The highest speed at which this reel is run on the softest materials is five revolutions of the inside cylinder to one of the cloth cylinder, and there are no air currents within the machine to interfere with the separations.

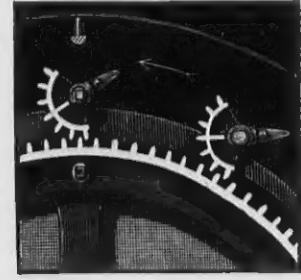
The adjustment of the beaters is entirely new, and is the main feature of the invention. By removing a small door at the tail end of the machine the miller can, with a simple wrench, instantly change all the beaters at once to any angle he may choose to suit the action necessary on the material to be handled, whether from change of weather, change of wheat, or change of grinding.

By setting the blades back, as shown in sectional cut "A," the material under treatment will be forced out against the cloth in a greater or less degree according to the angle at which the blades are set. By setting



B

etc., and prevents them from tearing the cloth. A convenient arrangement is provided for cleaning out this basket. The material is distributed along the inside of the bolting cloth by the spiral of the distributing blades. The flour is bolted through the cloth, and the tailings are discharged freely through the open end of the cloth cylinder at the tail without the aid of scoops, screw, or air-tight device. The air that enters with the stock through the spout at the head of the machine, together with any air currents that may possibly be produced by the distributing blades, moves along inside of the cloth cylinder towards the tail end by gentle suc-



C

plest and best in use. The gearing is all outside, as shown in cut; runs perfectly noiseless, being accurately made and carefully adjusted. The machine is substantially built and handsome in appearance. It is made of hard wood frame, with slatted and panel doors, and highly polished like a fine piece of furniture.

For prices, etc., address the manufacturers, The Bradford Mill Company, Eighth and Evans Street, Cincinnati, O.

WHEAT CORNERS IN THE PAST.

A reminder of old "corner" days may be of some interest during the present exciting time, especially to many traders who, new on the floor, have never witnessed such maneuvers; and we have carefully looked up in the files of the *Chicago Daily Trade Bulletin* some of the renowned and historical "squeezes" of days gone by.

1887—On May 18 of that year prices reached \$2.85 for No. 2 spring, and the market then was described as being in a few hands and

condition without precedent, but declined to and closed at \$2.16.

1871—In August of that year a "corner" was run during the first half of the month, and the price advanced from 99½c to \$1.20, but declined to \$1.14. During the latter half of the month another attempt was made, but the combination, after advancing the price from \$1.02½ to \$1.30, sold out on the last day, and the closing price was \$1.10½.

1872—In August of that year prices were advanced to \$1.61 on an attempted "squeeze" or "corner," this price being reached on the 16th and held above \$1.48 through the 19th, but on the following day collapsed, selling off to \$1.10, and closed at \$1.19.

1880—In that year a "corner" was run as early as May, the price being held the entire month at \$1.12@1.19, and closed at \$1.14.

1881—August of that year witnessed a "corner" in which the price was advanced from \$1.19 to \$1.38, and closed at the latter figure.

1882—Was a memorable year for "corners." One was run in April, when prices ruled

2 spring, and spring wheat only was deliverable on such contracts.

1887—In June of that year an attempt was made to "corner" the market by a Cincinnati combination, and prices were advanced from 80½c to 94½c, but on the 14th the market collapsed for want of collateral and prices declined until 68c was reached on the 21st.

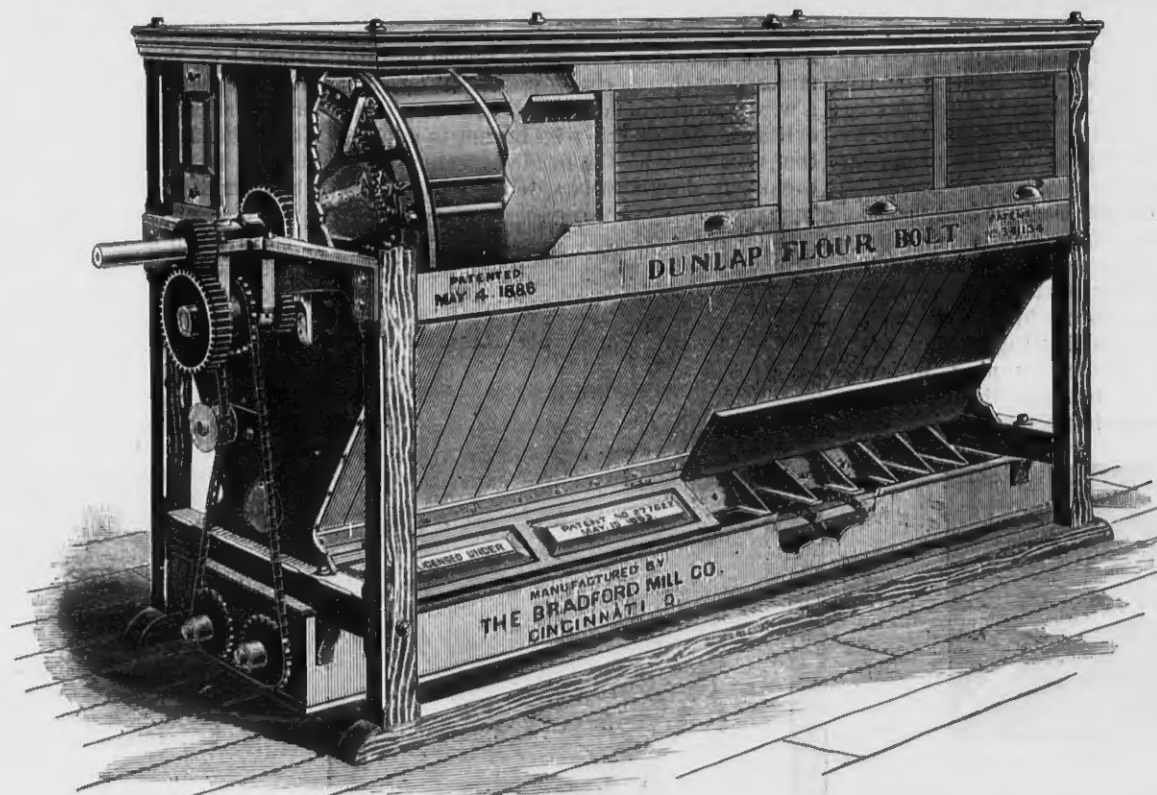
It is six years since a "corner" in wheat was successfully carried through to the close of the month, with the exception of the present one, and little over one year since an attempt to do so proved a disastrous failure.—*N. Y. Commercial Bulletin.*

PROPER POSITION OF GAUGE COCKS ON BOILERS.

Three gauge cocks are generally used on a boiler, sometimes four. The upper gauge cock should be placed at the highest point at which it is desired to have the water level; and the lower gauge cock at the lowest desired water level. The general practice is to place the lower gauge cock, in large boilers,

the horizontal lines will be the position of the centers of the other gauge cocks. The amount that the oblique line slants towards one side or the other is arbitrary, and for this you must use your own judgment. These remarks apply to horizontal boilers. In vertical boilers, the height of the water carried above the crown sheet is scarcely ever more than twelve inches; hence the lowest gauge cock in these boilers is generally placed from 10 to 15 inches above the crown sheet, according to the height of the water carried; the position of the other gauge is determined as before. In some vertical boilers the whole length of the tubes are covered with water; in such cases the lowest gauge cock is placed on, or one inch above, the desired lowest water line.—*American Machinist.*

In discussing "corners" says *Daily Business*, Chicago, it is well not to forget that consumers do not at any stage of the proceedings suffer in these latter days, while producers are benefitted immensely. The loss falls al-



within \$1.32@1.42 the entire month, and closed at \$1.42, though \$1.31 was fixed by a committee as the settling price. In June another "corner" was run and prices held within the range of \$1.25@1.35½, and closed at \$1.35. In July the third "corner" was run, prices that month ranging at \$1.26@1.36, and closed at \$1.38. In September another and fourth "corner" was run, with prices ranging from 97c to \$1.08, and closed at \$1.08. A curious fact in connection with these "corners" was that each one was run within a 10c range, showing there must have been some systematic and arithmetical cyphering to bring about such uniform results. This was the last year of a successful "corner" previous to the one just ended. It was at this time that the proposition to change the rules, making both spring and winter wheat deliverable upon contracts was adopted, and went into effect June 1st. Previous to that the speculative grade was No

say five-foot boilers, 3 inches above the highest point of the crown sheet; in smaller boilers this distance is sometimes reduced to 2½ inches; the other gauge cocks are placed above the lower one, so that they will be 2½ inches apart, measured in a vertical direction, in small boilers, and 3 inches apart on large boilers. Generally, the gauge cocks are not placed directly above each other, but are placed in an oblique line, so that, when the water or steam is blown out of one gauge cock it will not blow on one below it. Hence, in order to place the gauge cocks, first locate the center of the lower one, then, if three gauge cocks are to be used draw on the boiler two horizontal lines, the first 2½ or 3 inches (according to the size of boiler) above the center of the lower gauge cock, and the second horizontal line 2½ or 3 inches above the first one; then through the center of the lower cock draw an oblique line; the points in which the oblique line intersects

most entirely upon the speculating element except in case of collapses like that which occurred when the Fidelity bank went down. When a corner goes to smash innocent people very often suffer, but successful corners are a tax only on speculators. All this talk about corners in breadstuffs being a tax on consumers is usually sheerest nonsense. In olden days, before dealing in futures was known, consumers paid direct tribute to the corners, but not now. If the rule of trading could be so framed as to permit the escape of commission merchants, who are sometimes obliged to stand uncomfortably in the gap for awhile, and the fight could be narrowed down to the cornerers and the men who insist on holding out to the last, no legislation on corners would be asked for.

HEAD millers in mills having a capacity of 150 bbls. or more will find it to their advantage to send us their addresses with name of firm employing them, etc.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

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otherwise agreed upon.

For estimates for advertising, address the UNITED

STATES MILLER.

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MILWAUKEE, SEPT. AND OCT., 1888.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

Sworn Circulation, 10,000 Copies each Month.

AUGUSTUS WOLF succeeds the firm of Wolf & Hamaker, Chambersburg, Pa. This firm has enjoyed a lucrative business among Eastern millers for many years.

EXPOSITIONS are now being held in Cincinnati and Columbus, O., Buffalo, N. Y., Minneapolis, Minn., Chicago, Ill., St. Louis, Mo., Kansas City, Mo., Richmond, Va., Racine and Milwaukee, Wis. Toronto, Ont., is also entertaining visitors with a grand industrial exposition.

We publish in this number a very complete list of United States Patents granted from Dec. 1887, to the present time, that are of interest to the milling and grain trade. It will be well for parties interested in such patents to preserve this list for future reference.

THE editor of this journal has traveled a considerable portion of the Central States during the past month, and from personal observation believes the mill building and furnishing business to be in a healthy condition. It is true the margin of profit is not as great as it was in former years, but it is probably fully up in that respect to any other line of trade.

THE Charles A. Pillsbury company, Minneapolis have recently finished a division of \$40,000 among their employees. This has been made in pursuance of a profit-sharing plan adopted four years ago. For two years there have been no profits to divide, but the past year was profitable. This is believed to be the largest amount ever divided under the profit-sharing system.

A DISPATCH received from Minneapolis, Oct. 2, says: Flour has advanced here \$2.00 within two months and it is predicted that it will touch \$10.00 a barrel. Chas. A. Pillsbury, the head of the largest milling firm in the world, said to-day: "We have had quite a little squall in prices, but that is nothing to the cyclone that is coming later on. My reason for this is the fact that there is not enough good milling wheat in this country to supply our local demand for good flour, to

say nothing of the foreign demand, which cuts no figure on present crop, as no matter how much they would offer for our flour our home trade must have it at higher prices."

A CONVENTION, called the Deep Water Convention, met at Denver, Col., for the purpose of devising ways and means and securing Government aid for the establishment and construction of a deep water port on the Gulf of Mexico, capable of admitting the largest ocean vessels. It was agreed that the port should be located on the "northwest coast of the Gulf, west of 93½ degrees west longitude." When such a port is complete it will materially change the course of transit for states west of the Mississippi river to trans-oceanic countries.

HERR KARL WITTGENSTEIN, Central Director of the Prague (Bohemia) Iron Manufacturing Company, having spent much of the past year in traveling through the United States on a tour of observation, is writing a series of articles for the *Allgemeine Muehlen-Nachrichten* of Budapest, Austria-Hungary. They, no doubt, are read with deep interest by his countrymen. He comments with undisguised wonder at the apparent superior intelligence of the laborers of the United States to those in Europe, and also the great amount of labor-saving machinery used everywhere, in all lines of production, from farm to factory, and the great amount of both raw material and manufactured goods produced for export in proportion to the population. He, of course, finds some things, especially politics, not to his liking, but taken all in all, evidently has a high regard for our country.

ENGLISH millfurnishers are doing a larger export business now than at any previous time. Their orders come from all quarter of the globe, but more especially from Australia and New Zealand. At Melbourne, Australia, roller mill flour brings \$5.00 per ton more than stone made flour and the results is a rush for a grand change from stone to roller process milling. THE UNITED STATES MILLER has cultivated considerable correspondence during the past year with these countries and we think American manufacturers represented in our columns will after a little build up a trade there which will be mutually agreeable.

THE Bureau of Statistics' report of exports of breadstuffs for August shows a considerable falling off from the exports of August, 1887. This year they were \$12,023,687; less by \$6,800,000 than last year. Nearly the whole reduction is in wheat, corn showing an increase of about \$700,000. For the first two months of the present fiscal year the exports of breadstuffs were \$19,906,569, which is less by \$14,233,094 than the exports for the first two months of the last fiscal year. A comparison of the exports for the first eight months of 1888 with the exports for corresponding period of 1887 shows a falling off of more than \$49,000,000.

AN English experimenter is authority for the statement that cockle (*Aprostemma Githago*) is not injurious to the human system

when ground with the wheat into flour. The grinding and cooking he believes to remove all injurious qualities. Of course the flour will be more or less speckled according to the amount of cockle meal in the wheat. He says:

"The separated seeds, however, have proved deadly to oxen and sheep, and also to horses and hogs. But we aver that this was solely due to the seeds sticking in the stomachs of the ruminants, thereby producing inflammation, in the intestines of horses and swine. We never knew cockle seeds do poultry any harm."

AN EDITORIAL LOVE FEAST.

A long time since, when various milling journals were criticising the actions of the Millers' National Association, especially in regard to its choosing an "official organ," we took occasion to say in substance, that the Association was neither more nor less than a private organization for the benefit of its members, and that outside of them, no one had the right to dictate the line of conduct of its officers more than they would of any other organization. We have no reason, up to date, to change our opinion. We certainly know of no other organization in any other trade in which a large portion of the press attempting to represent it, has taken such a vacillating course as have the majority of the journals classed under the head of "milling papers."

No milling journals, so far as we can recall, ever criticised the Association, its officers, or its committees, until it was deemed expedient to appoint the *Northwestern Miller* the "official organ." It seemed to be all right when the *American Miller* was the "official organ," but when another journal received that honor—then, that old song with a chorus:

"Then—that's different, you know—That's different," made itself heard from Kansas City to Buffalo—from St. Louis to Chicago.

From that time on a number of milling papers commenced what looked very much like a pre-arranged course of "picking and pecking" at the Miller's National Association in general, and some of its officers in particular, until one bright day last May or thereabout, it was thought that the enemies of the "official organ" had secured some "influence" that would knock the "official organ" "into a cocked hat," so to speak; in which event, Bro. Mitchell, "in his mind's eye," could see no reason, in particular, why in the course of an incredibly short time, *The American Miller* could not again fly the "official organ" business at the head of its editorial columns, etc., and those of its contemporaries that didn't like it, could do the next best thing.

Then, the tone of expression immediately changed and the Millers' National Association was considered a pretty good thing after all, and it was laughable, indeed, to an observer to see the editorial somersaults perpetrated by milling journalists. Oh how they did tumble over one another to boom the Buffalo convention! and then—alas, there came a cold day in June when the "influence" refused to work satisfactorily. On a point of order declared to be well taken, the commit-

tee refused to set aside the action of the Association when in full convention at St. Louis, which chose the *Northwestern Miller* its "official organ," and so upon the close of that committee meeting, the *Northwestern Miller* bobbed up serenely, still the official organ. Then came another flop and the journalistic contortions indulged in by the floppers is something awful to behold and appears likely to continue until they lapse into a state of "innocuous desuetude."

* * *

The editor of THE UNITED STATES MILLER has been accused of writing editorials to be read before the Executive Committee and Bro. Mitchell of *The American Miller*, asserted that Sec'y Seamans wrote a certain one, which assertion was a falsehood. We do not know but that Brother Mitchell on the strength of false information, which he believed true, made this assertion, but we do know that when he made the assertion, to speak in plain English, he lied and if any one connected with the milling press gave him information to the effect that Sec'y Seamans wrote said article we demand his name; Mitchell, however, should have first thoroughly proved that *we* lied when we told him in person that Sec'y Seamans not only did not write the article in question but did not even know of its existence until a large portion of our edition of 10,000 copies had been mailed. It is our belief that the *American Miller* has been "hoodooed" with a big H and we almost pity it for it is said that the "hoodoo" never ceases its influence until its victim is dead.

* * *

The *American Miller* concluded an editorial in a recent number, sweetly and spicily concocted for the special benefit of THE UNITED STATES MILLER with that specious line of advice from the naturalist poet, which says:

"Dig little mole—there's light above."

We have accepted the advice and are "diggin'." As one good turn is said to deserve another, we give Bro. Mitchell the advice we heard an Irish boss give to his man, while digging in a trench to find a leak in a gas-pipe: "Dig ye devil—dig right straight ahead—the howl ye're after and h—l too (God save us) ain't far off, judgin' by the dirty smell about yez."

GERMAN JUTE INDUSTRY.—Although the jute industry was introduced into Germany as far back as 1861, its real progress is of a recent date. Besides pack-cloth, sacks, sail-cloth, rope material, etc., German manufacturers produce carpets, tickings, huckabacks, and the like. Recently a firm produced in the market a material to which the name of jute velvet has been given, and which is used for furniture coverings, hangings, etc., and is even applied to tapestry. The number of jute factories, spinning and weaving, in Germany, possessing 57,128 spindles and 2,250 looms, is stated to be 23. Since the last return of the society of German jute manufacturers several new companies have been organized, so that the number of spindles now in use may not be far from 70,000, having a total productive efficiency of 600,000 double centners (100 kilograms). In 1886 the imports of raw jute reached only 17564 tons; in 1886, 44,000, mostly brought to Hamburg and Bremen.

FREE WOOL.—In the discussion of the question what effect the removal of American duties on wool might exercise upon the German woolen industry, trade journals generally have admitted that the measure was not calculated to benefit German wool manufacturers, and that American manufacturers, with their known energy and enormous manufacturing facilities, would soon make such progress in the manufacture of all kinds of cloth as to emancipate the American wool industry from any foreign competition. The *Leipzig Monthly for Textile Industry* writes Upon the subject:

"It is well known that Germany participates largely in the export of woolen goods to the United States, and it is now asked how far the abolishment of American duty on wool will effect German woolen industry. The question may be answered by saying that the effect is not likely to be a favorable one, because it is thought that the American woolen industry upon the removal of import duty will improve and progress in a measure as to hinder our woolen ware export to that country.—From the Report of U. S. Consul, Jacob Mueller, of Frankfort A. M.

FOREIGN ITEMS.

THE London Civil Service Bread Co. Lt., at their half-yearly meeting held August 20, found that their business had resulted during the first six months in a loss of £12,524. A committee was appointed to raise more capital.

It is proposed to combine the flour-mills and bakeries of London in one great establishment, where the work may be done in immense ovens, under scientific management, and at a material saving in expense.

A BOMBAY, India, correspondent, formerly a miller in England, writes as follows:

Wheat blending is with us a very important study; we have such a variety of differently constituted wheats here that it requires the closest attention and care to so blend them that the flour will turn out regular and uniform in quality and appearance. Besides this difficulty we have much trouble in cleaning our wheats; as a rule we have quite five per cent. of dirt to get out before it is possible to mill them. At home we used to think the Indian wheats we got there very dirty, but since coming to India my experience shows me that the wheats exported from this country are far and away cleaner than those sold here for local consumption.

THE British Consul at Nicolaieff, South Russia warns British shippers against the many tricks of the Russian grain trade, such as mixing poor with good wheat, doctoring damaged grain, etc.

A NEW company for the manufacture of oat meal on a large scale has been organized in Aberdeen, Scotland, and the mills of Glasgow are reported to be running day and night.

THE SWISS PATENT LAW.—Switzerland has now followed the example of other civilized nations of the world in adopting a law for the protection of inventions. This legislation contains several new and extremely interesting provisions, although it cannot go into effect until it has been decided whether a submission to the people will be demanded by the petitions of 30,000 voters, and in the latter case until it has been approved by a majority of voters. A period of at least three months

will be necessary to fulfil these formalities. It will be particularly noticeable to persons interested in the subject that only material objects and not processes are protected by this law. This feature is said to be due to the efforts of the manufacturers of aniline colors and chemicals whose interests would be injuriously affected by a law as comprehensive as that of the United States, for instance, which protects "useful arts" and "compositions of matter" as well as tools and machines.

THE Belfast News Letter says: "Professor Max Sering has been over in the United States specially investigating the development of agriculture, and although the famous Bonn (Germany) professor is fain to admit that American competition must be regarded as controlling the grain markets of the world, yet he roundly avers that competition, as far as Germany is concerned, has become year by year more and more insignificant.

MESSRS. John Haig & Son, of Yackandandah, have just had erected for them by Messrs. Ramsey & Nichelsen (contractors) of that place, and Mr. Fred'k Moss, engineer of Geelong, a fine 200 bbl. roller mill on the Simon system at Glen Creek, Dederang, Australia. It is run by water-power, a Lef-fel wheel being used. "Eureka" grain cleaning machinery from S. Howes, of Silver Creek, N. Y., is used.

MESSRS. McLennan, McBride & Co. at Mooroopna, near Melbourne, Australia, are building a large roller mill.

THE 16th International Grain Market was opened in Vienna, Aug. 27, 1888, when representatives from all the countries in Europe attended at the Corn Hall. The president of the International Market Committee, Herr Naschauer, stated in his report that the area of cultivated corn land had increased since 1853 from 8,000,000 acres to 31,500,000 acres. This fact, he said, taken with American competition, accounted for the low prices which were no longer remunerative to agriculturists. Taking the number 100 as the sign of a good average harvest, the following figures were given to represent the present year's crops in the principal European countries:—

In wheat.—Moldavia, 130; Bessarabia, 125; Hungary, 110; Austria, 107; Russia, 90; France, 80; Great Britain and Ireland, 78; Italy, 75; Saxony, 95; Denmark, 80; Switzerland, 78; South Russia, 120. In rye.—Austria, 92; Hungary, 85; Prussia, 74; France, 85; Roumania, 130; South Russia, 120; Serbia, 100; Bavaria, 70. In barley.—Austria, 98; Hungary, 85; Prussia, 94; Bavaria, 120; Denmark, 120; France, 85; England, 100; South Russia, 120; Roumania, 125; Serbia, 90. In oats.—Austria, 103; Hungary, 84; Prussia, 86; Bavaria, 107; France, 100; England, 100; North Russia, 100; South Russia, 120; Denmark, 125; Holland, 107; Italy, 65. The figures for Egypt are: wheat, 110; barley, 75.

The report further states that the export price of American wheat already closely approaches the cost of production. Austria-Hungary will this year be able to export four to five million metrical centners of wheat or flour, and two and a-half to three millions of barley, but no rye or oats. The market was unusually well attended, but business was dull.

OUR LONDON LETTER.

(From our own correspondent.)

August must be reckoned, like July, as a most unfortunate month for the English farmers who have been relying on their crops being too backward to suffer much from the heavy rain-fall in July; and, thinking that such wet weather could not continue long in August, they clung to a hope of some recovery in the crops. Disappointment, however, was in store; for after my letter was dispatched at the beginning of August, they only had one week of fair summer weather, and since then, not three continuously fine days have been known. The weather has remained cool, unsettled and showery, with heavy thunder storms. What was to be expected has, in fact, taken place. The spread of rust, fungoid, blight, mildew, and a greyish moss-like growth on the straw has gone on very rapidly in the wheat fields. Progress in harvesting has, therefore, been very slow, and a very large proportion of the corn, even in England, is still very green. It will need something better than the ordinary weather to ripen and make it a good wheat for milling purposes. The first wheat cut this year was at Ash, in Kent, on the 11th August, the sunshine of the few previous days having brought it to a ripe condition. New grey peas were offered on the same day at the Canterbury market, and realized 32s per quarter. The next wheat that fell to the scythe was at Christchurch, in South Hampshire.

With the weather as it has been for the past few days, harvest operations are not likely to finish; in the British Isles, until the middle of October, and it cannot be expected that harvest will become general until next week has fairly commenced.

Great as was the damage done to the crops by the deluge of rain which fell 4 or 5 days ago, beating down many a piece of corn, previously standing well, and staining the grain of the badly-laid crops, the wet weather did not last long enough to cause much sprouting and the sunshine of Friday and Saturday quickly dried the soaked sheaves and the loose corn lying out in the fields. Unfortunately, however, Sunday brought more rain and a falling barometer, thus adding to the many disappointments which farmers have had to endure throughout this abominable season. The advantage of a fine September would be so immense that merely a bad beginning is a grievous misfortune. In the cases where the crops were early laid by the July storms no amount of sunlight and heat will now cause the heads to fill. Weeds have, in most cases, grown up through the laid stalks, and where such is not the case they have become so matted and mildewed that nothing but thin, shrivelled grain can be expected, and the sooner such wheats are cut up and harvested, the better. In some districts the proportion of such laid crops is large, in others much less so; hence the very noticeable disparity in reports coming to hand. The harvest expectation at the end of July was poor, but August has lowered instead of raising it. This month the bulk of the harvest has to be secured, as quite three-fourths of the wheat crop is still standing. English wheat cannot come forward freely until October, and the English farmer would be wise to hold on to his grain until the East

winds can dry the stacks. The increased wants in England, France, Italy and Germany, and diminished export surplus in India mean that the new wheat campaign must start with the recognition that not 30s or even a 35s level of price will suit the coming cereal year. The markets during the past month have been becoming steadily dearer, and at Mark Lane Market to-day there was a remarkably small supply of English wheat for the first Monday in September, a year ago it was nearly 10 times as much. A few samples of fairly good new made 40s to 42s, but millers bought little English, owing to the want of condition as well as the restricted choice of samples.

The top price of flour advanced 3s per sack last Monday and at to-day's market the other brands of English flour advanced another 1s per sack and foreign was 6d to 9d dearer. There is at the present time very little English flour obtainable under 27s and the lowest for foreign is about 24s 6d per sack (not counting red-dog). At the close of to-day's market New Dantzic wheat of poor quality was offered at 40s per quarter and extra old white English realized 45s.

The prices quoted in the following table must not be taken as accurate, but they will give the readers of the UNITED STATES MILLER some idea of the correct advance on the English markets during the last four weeks. The table shows the quantities sold and average prices of British wheat, imperial measure, as received by the inspectors and officers of excise for the four weeks ending 1st September.

	QUANTITIES SOLD.	AVERAGE PRICE.
11th August.....	16,789½ quarters	34s 6d
18th August.....	16,570½ "	35s 9d
25th August.....	20,647½ "	36s 1d
1st September.....	10,763½ "	36s 4d

According to an Odessa correspondent, the harvest in South Russia is so abundant that the miners are leaving the coal mines to work in the fields and the output of coal is nearly suspended.

The consumption of wheat in FRANCE for the cereal year just completed is reckoned at 124,000,000 hectoliters (24 bus.) and the crop of the present year at 90,000,000 hec. only. If the latter calculation be correct, the formidable quantity of 34,000,000 hec. will have to be bought by France outside of their own country.

The Vienna Seed Fair opened on the 27th August and was attended by a large number of corn merchants from all parts of Europe. The estimates produced at the meeting indicate a great aggregate deficiency in the productions in Europe, and, taking the figures and those relating to extra-European countries into consideration, *Beerbohm* is well within bounds, in computing the world's wheat production at twenty million quarters less than that of last year.

The annual returns of the agriculture of Great Britain and comparisons with similar returns obtained on the same day in each of the last two years were collected on the 4th of June, and have been issued during the past month. They are as follows:

The acreage of land in Great Britain under wheat was in 1888, 2,564,010; 1886, 2,285,905; 1887, 2,317,324; showing for this year an increase of 246,686 acres, or 10.6 per cent. over 1887, and an increase of 278,105 acres, or 12.2

per cent. over 1886. Barley: 1888, 2,065,474 acres; 1886, 2,241,164; 1887, 2,085,156; an increase this year of 318 acres upon 1887, and a decrease of 155,690 acres, or 6.9 per cent. upon 1886. Oats: 1888, 2,882,223 acres; 1886, 3,051,596; 1887, 3,087,989; a decrease upon 1887 of 205,766 acres, or 6.7 per cent., and a decrease upon 1886 of 199,373 acres, or 6.5 per cent. Potatoes: 1888, 590,123 acres; 1886, 553,961; 1887, 559,652, an increase this year of 30,471 acres, or 5.4 per cent. upon 1887, and of 36,162 acres, or 6.5 per cent. upon 1886.

A large firm of agricultural engineers have lately added to their works some new tools and other necessary appliances for turning out roller mill machinery, and a second large engineering firm is to follow suit next December, much to the disgust of those who are already in the business, and who are feeling now the effect of competition.

The Climax Dust Collector is being introduced on the English market, by Mr. J. W. Throop, of good renown. Other new machines will be placed on the market shortly by English and German inventors. Mr. Simon is very busy erecting new roller mills on his system and is doing about a quarter of the whole trade in England and her colonies.

A new wheat cleaner has been placed on the market by Messrs Thomas Robinson & Son, of Rochdale, but it is doubtful if it will equal the well known American makes.

Several people are busy designing machinery to remove rye from wheat. I have seen it done very successfully in an English mill in the midlands.

The Tintometer is a new instrument recently patented by Mr. J.

W. Lovibond, of Salisbury for measuring the depth of color in liquids and solids. This instrument has already been introduced to the English milling trades, and will form a valuable help to the English millers in keeping their flours uniform. This permanent color scale consists of a series of standard scales made of colored glasses numbered according to their depth of color and an optical instrument for holding the glasses and object to be measured.

The accompanying illustration (Fig. 1.) shows a section through the optical instrument which is divided by a central partition B terminating at the eye-piece C in a knife edge, which being inside the range of vision is not seen when the instrument is in use.

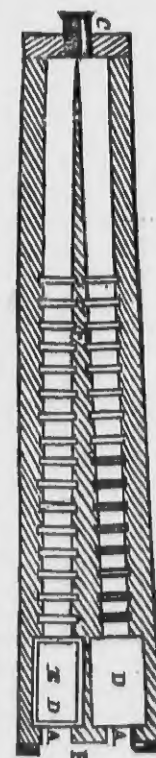


FIG. 1.

At the other end of the instrument are two apertures D. D. of equal value which are divided by the thick end of the central partition B which, together with the parallel sides

FIG. 1. THE TINTOMETER DESIGNED FOR TESTING LIQUIDS.

of the instrument, is recessed by grades, in order to hide the edges of the standard



FIG. 2. THE TINTOMETER FIXED FOR TESTING FLOUR.

glasses. The top of the tintometer is provided with slots in line with the grooves which admit and guide the colored standard glasses into the optical instrument. In the instrument used for testing opaque colors the vacant spaces D and E, D are not required, but the apparatus is used as shown in the illustration, (fig. 2.)

The instrument D is placed into the body of stand, and drawn up until firmly fixed in the groove; the whole is then arranged in front of the light by means of the adjustable prop G, at such an angle as allows the light to fall equally on both sides of the stage H.

In a future letter I will give you the results of some experiments I have been carrying out at Glasgow.

The *Daily Telegraph* of Aug. 27th, says that "one account states that bread was selling in Brighton on Tuesday last which had been made from new wheat grown by Mr. Luckin, of New-Shoreham, the crop having been to the extent of 40 bushels per acre—a highly satisfactory quantity to the grower, the weight per bushel being only defective, which was 60 lbs. instead of from 63 lbs. to 66 lbs., which Mr. Luckin's wheat crops have averaged for two or three years past. The surmise may be reasonably suggested, however, that any sample of new wheat found to weigh as much as 60 lbs. per bushel would have weighed at least 4 lbs. more, if it could have been secured in as dry and solid a condition as the samples of last year's crops. Still, what Mr. Luckin's new crop would gain in weight by this it would be likely to lose in bulk. New wheats, under such circumstances as have been recently experienced, can scarcely be expected to come to hand weighty according to quantity, and it is only surprising that one should be found so heavy as this. Tunis, is coming to the fore and will no doubt in the future export large quantities of wheat. Public works are being carried on as rapidly as possible. Several new railways are about to commence—a canal is about to be cut and a port made at Tunis itself.

The duties leviable in accordance with the general customs tariff upon cereals and flour made therefrom and also on beans entering Portugal are altered to the following:

Wheat, per kilog. 20 reis=1.06d; Maize, per kilog. 16 reis=0.85d; Cereals in grain not otherwise specified per kilog. 15 reis=0.80d; flour made from any kind of cereal per kilog. 30 reis=1.60, and beans per kilog. 14 reis=0.74d. The government have power to raise these duties as compensation for any bounties on exportation from exporting

countries, or reduce when required, in order to prevent any increase in the price of bread. By a recent law the Portuguese government are also enabled to afford their assistance for the establishment of municipal bakeries at Lisbon, Oporto and at other important towns by according to them any public buildings for the purpose of settling up the bakeries and allowing the importation, free of duty of all machinery and utensils for making bread.

According to the new customs, duties proposed to be levied on articles imported into New Zealand, flour will bear 20 per cent. ad. valorem per bag.

A royal decree has recently been published giving the force to law to the decree temporarily applied for last February for increased duties on cereals and flour manufactures entering Italy.

L. MAYGROVE.

London, Sept. 18, 1888.

OUR BALTIMORE LETTER.

(From our regular correspondent.)

Since my last review the Baltimore flour market has experienced remarkable animation and activity, and this has been due to the rapid advance in values, and the scarcity of desirable stock in this locality. The improvement inaugurated thus far has been from 50 to 75 cents per barrel on winters, and 75 cents to \$1.00 per barrel on springs.

Many, if not most of our dealers, I regret to report, were caught with but limited supplies, when the "boom" began, and have accordingly suffered the consequences.

Our merchants, for the last few years, have been so successful on the "bear" side that it became almost impossible for them to change tactics at the proper time, but, at this writing, they have accepted the situation, apparently, and are now swimming with the current, sadder but wiser men.

City mills have done a heavy business, during the month, both with the local and South American trade, and in fact, have effected sales to the latter sufficiently to keep them busy for a long time to come.

It was a bitter pill, however, for these exporters to purchase at the advance, but the orders came in, and they, having no choice in matter, were compelled to "walk up to the captain's office and settle."

Owing to meagreness of holdings, millers' agents have been enabled to consummate large transactions to arrive, but this was accomplished mostly at figures a little less than those now prevailing.

The reprehensible system in vogue among jobbers, to sell retail dealers on the slightest rise, all they will likely need for months to come, and then to quietly retire and wait for the market to sag before replenishing, has received a black eye of late and, indeed, it would be a great blessing to all concerned, if it were possible, to entirely and forever eradicate and eliminate the practice from mercantile ethics.

It is a one-sided game and a breeder of discontent.

The course of the wheat market has been a surprise to even our shrewdest merchants.

While many looked for a higher range of prices none expected what has been realized.

Every argument, however, was on the bull side, but all previous efforts to permanently bolster values have proven so disastrous to

those engineering them that timidity and conservatism have been the order of the day, and, therefore, prevented the material benefits which otherwise would have resulted to our traders had they relied upon their customary good judgment and operated accordingly. The volume of legitimate business, though, has been enormous, since new wheat has freely come to market.

No section of country, comparatively, has been more prolific on the new crop than the states of Maryland, Pennsylvania and Virginia.

The quality of the berry is excellent, and the yield is greatly in excess of last year.

Shippers, millers, speculators and mixers have all been buying sample or table grain daily, and manipulating it to suit their several purposes.

The European demand has been constant, up to within about two weeks ago, when it slackened off, ostensibly for the reason that freight rates had advanced beyond a workable basis.

Trade is somewhat paralyzed now, too, by the manipulation of the September deal in Chicago.

"Old Hutch" seems to have things his own way out there, and the "boys" here intend to let him severely alone, for the time being, anyhow.

Manipulation, by the way, as carried on in these latter days, is a monstrous iniquity—it clogs the wheels of trade; it creates distrust; it makes cowards of us all; it places fictitious values upon the necessities of life; it impoverishes the rich; it brings ruin and desolation to happy homes; it takes life; it makes widows and orphans; it helps to fill our jails, penitentiaries, alms-houses, and lunatic asylums; it is a "pestilence that walketh at noonday;" in a word, it is a curse to humanity and should receive the condemnation it deserves by being driven irrevocably from the face of the earth.

The stock of wheat in Baltimore elevators is 1,172,752 Bus.

Baltimore, Sept. 28, 1888.

CHESAPEAKE.

(From our own correspondent.)

OUR ST. LOUIS LETTER.

St. Louis, Mo., Sept. 25, 1888.

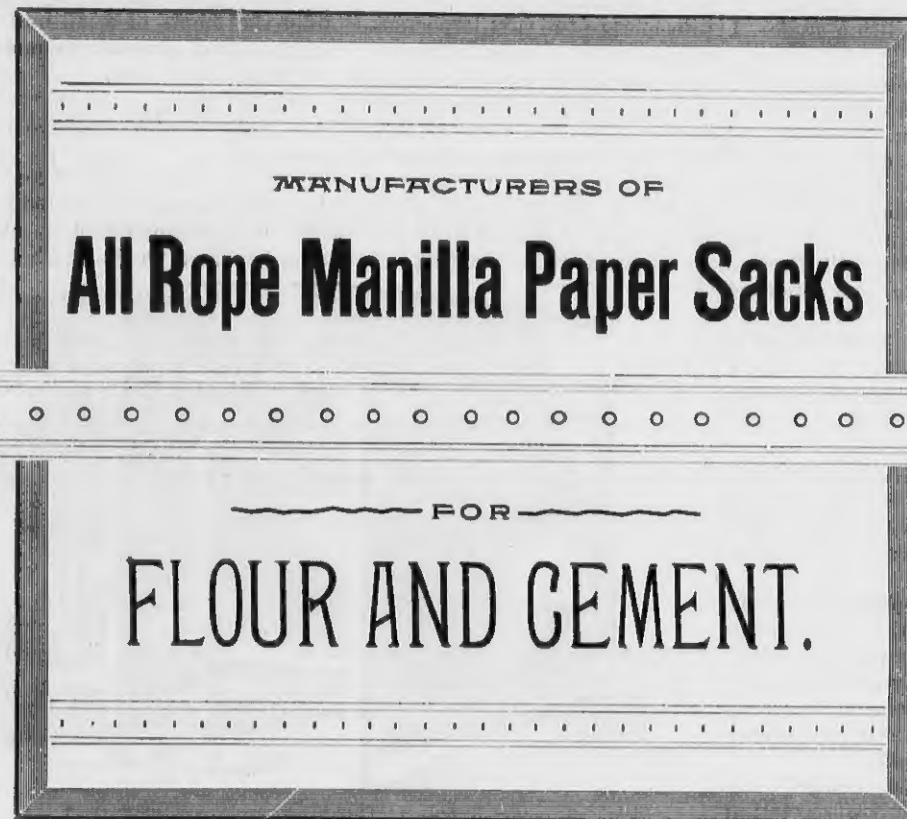
Editor *United States Miller*, Milwaukee, Wis.

DEAR SIR: The excitement in breadstuffs consequent upon the appreciation of values, has made it rather difficult to preserve careful statistics for publication; all items of interest, therefore, are liable to be more general than specific.

The meeting of millers referred to in my last, as in contemplation, was duly held at the appointed time, at the Lindell Hotel, in this city, and was attended by the local millers generally, together with a good representation from interior points, and was reported as harmonious in its discussions of such questions as pertained to the advancement of their interests. A general disposition was shown to adhere to the conditions set forth in their circular (a copy of which was sent you), and so far as practicable, to make their observance general. An article in the *Globe-Democrat* of this city, leads me to conclude, however, that owing to the advantageous position of millers of the South and Southwest, with respect to the trade with Southern

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or 50 pounds of Flour---as far as can be trans-
ported in Cotton Sacks. : : : : : : : :



These sacks will stand abrasion, do not sift, are air-tight,
and proof against insects.

points, that each section is likely to become a "land unto itself," and shall not be surprised to learn that all efforts looking toward the organization of a "Trust," so far as making uniform regulations for all sections is concerned, has proved futile.

The milling interests continue active here; the output during the past month has been heavy, and has been steadily absorbed by the demands of the trade, at steadily improved values; and while at no time has the trade been subject to the violent fluctuations of the speculative grades of wheat, it has yielded satisfactory results when based upon our No. 3 grade, which seems really to have become the popular milling grade. I know of no idle mills.

The continued unfavorable reports from the Northwest, added to the estimates coming from abroad, have had the effect of causing a general stampede of the "Bear" element, which now seems to be seeking shelter as best it can upon such terms as the "Bull" sentiment is pleased to grant. Cash No. 2, closed to-day at 96c bid; the December option at \$1.00, and the May option at \$1.04 bid.

On the 27th of September, 1887, our elevators held 5,690,283 bushels, while to-day they hold 4,198,206, and the falling off in other leading markets seems to be even more apparent than in this.

Those industries connected with the milling interest represented by the Todd & Stanley Mill-Furnishing Co., "Downton Co.," Tom Miller and others appear to be active and prospering.

The rigid quarantine regulations established in many portions of the South, is beginning to be felt in its influence upon business with that section and many are apprehensive, that trade for the coming few weeks will be largely curtailed, and with many sections almost entirely cut off.

The projected "Merchant Bridge" designed to further facilitate transportation across our river at this point, seems to have become an assured success, and great expectations as to its benefits to our commerce are shared by both our business men and citizens generally. Our carnival season is upon us, and our city is filling up with visitors from all points, and it is expected that, "Veiled Prophets" and Fair week, will make a showing, hitherto unequalled by bringing an aggregate of business such as our city has not enjoyed before. The patrons of your publications in our city speak flatteringly of the benefits derived from them and you may confidently count upon further accessions to the list.

Messrs. D. L. Dickenson & Son, an active and responsible firm engaged in the "Flour, Grain and Feed" business, are making an active canvas, through the East, and are greatly aided in their work by using the "American Mill and Elevator Directory."

Respectfully,

S.

A VALUABLE MACHINE FOR MILLERS.

The name of Faustin Prinz, inventor of the well known Prinz Pat. Dust Collector, conveys to millers throughout the world, an idea of practical perfection, and much is expected of a machine that bears this gentleman's name. The Prinz Cockle Machine which we illustrate herewith, was placed upon the market comparatively a short time ago. It is meeting

with success upon every side, and users of the machine are daily giving the strongest testimony to its efficiency. Before placing the cockle separator on the market much time and money were spent in experimenting upon and perfecting its working. The machines are at present made in four sizes, the cylinder which embodies the essential particulars of the invention, being the same in each. The particular feature of the cylinder is in the material, being made of steel, thus insuring great durability, and in the shape of the indentations. Indented cylinders in cockle separators are not new, but this is the first attempt to get out of the beaten track and to apply scientific principles to the most important detail of the construction. The shape of the indentations, which has been arrived at only by the most thorough and pains-taking experimenting, is shown in Fig. 1. It will be noticed that instead of the common half spherical or cup-shaped indentation, this indentation is a little elongated and that the lower or working edge is square, thus making a shelf on which the cockle rests without rolling out, until it has

other, and arranged so that the stream of the wheat may be divided and one half sent to each grading reel, or it may be sent to the upper reel and what sifts through this reel sent to the lower reel and be regraded. As the machines contain no shaking sieves, and have cylinders small in diameter, they require very little power to drive them, one man being able to turn the No. 2 machine up to working speed when fully loaded.

For prices and further particulars write to the manufacturers, Messrs. F. Prinz & Co., Milwaukee, Wis. The Nos. 1 and 2 machines take but little room or power, have large capacity and are especially suited to the requirements of small mills, while the larger sizes are adapted to meet the wants of mills of larger size.

THE GARDNER FEEDER AND MIXER.

The utility of an effective device for feeding and mixing flour, middlings, etc., will be acknowledged by every practical mind. In fact, we doubt whether there are many mil-

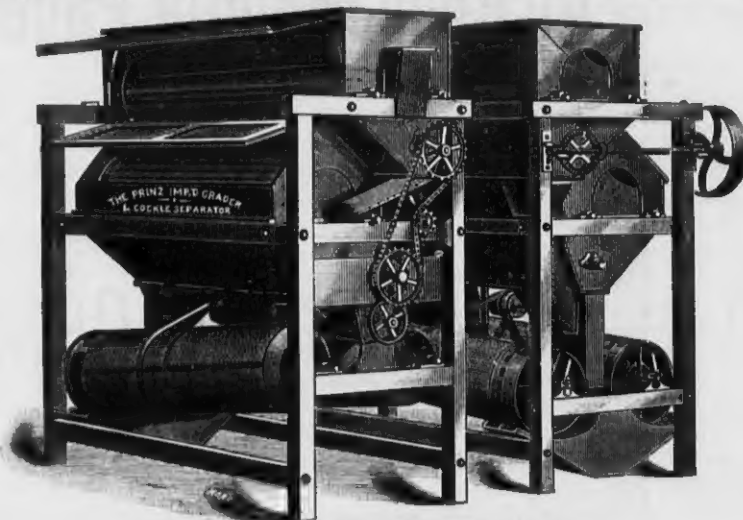


Fig. 1. Prinz's Improved Cockle Machine, No. 4



Fig. 3.

been carried well up on the inside of the cylinder. This makes it possible to place the separating diaphragm high enough to allow all of the wheat to drop back before reaching it, as shown in Fig. 2. The shell of the cylinder being made of steel has great durability and



Fig. 2. Showing Shaking Through (A) Inside of Reel.

these working edges retain their square shape and the cylinders will last a lifetime.

The smallest size, or No. 1 machine, consists simply of one of these cylinders, as shown in advertisement elsewhere in this paper. The No. 2 machine is the same as No. 1, except that a short grading cylinder is placed above the cockle cylinder, thus adding largely to the capacity. The No. 3 machine has two cockle cylinders side by side and one long grading cylinder above them. The No. 4 machine, shown in Fig. 3, is the same as No. 3 except that it has two grading reels, one above the

lers who have not at one time or another, rigged up some sort of device, and too often, we imagine, been to considerable expense, only to find themselves in possession of a rather indifferent device at last.

Every mill has its choking spells; and there is always more or less material that goes into the sweepings, that should be saved by a feeder feeding it slowly. Most large mills need the labor of a man or boy to attend to the feeding in "chokes" with a scoop, all of which labor could be saved by a Gardner's Feeder and Mixer. Then, too, on starting up the mill on Monday, or after a period of rest, the flour is "a little off," and more or less time is required to bring it up to the grade. With Gardner's Feeder, the off-colored flour can be run out, until the flour comes up to grade, then the off-colored flour can be dumped into the feeder. So the stuff in purifier pockets can be handled with this feeder, and fed into the low grade reel. But we need not enlarge on the value of such a device, as that will be at once apparent to any miller. The machine is very simple in principle and without any complication. It overcomes all the difficulties usually met with in feeding and mixing flour and similar material, and can be regulated to feed from the smallest quantity desired, up to five barrels per hour. The space it occupies is small, the dimensions of machines being two

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Milwaukee & Northern R. R. SHORT LINE

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Hancock, Houghton, Champion,
Republic, Iron Mountain, Menominee, Mich.

Marinette, Green Bay, Depere, Neenah,
Menasha, Appleton, Wis.

THE TABLE OF EXPRESS TRAINS.

STATIONS.	DEPART.	ARRIVE.
Champion, Republic,	*1:35 A. M.	*3:20 A. M.
Iron Mountain, Menominee,	*1:35 A. M.	*2:30 A. M.
Marinette, Green Bay,	3:10 P. M.	3:55 P. M.
Depere,		
Green Bay, Depere, Apple-	*7:35 A. M.	
ton, Menasha, Neenah,	7:55 A. M.	3:55 P. M.
	3:10 P. M.	10:20 A. M.

*Daily. †Daily, except Monday. All other trains daily except Sunday.

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feet three inches, two feet and 1 foot six inches. It is very light and its extreme simplicity renders it almost impossible to get out of order; nor can the feed hang in it, as the hopper is made tapering largest at the bottom. (See cut in advertisement.) The speed at which it should be driven is from twenty-five to thirty-five revolutions per minute; but it can be run faster if necessary. The size of pulley is ten inches.

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This machine is manufactured by The Stephen Hughes Manufacturing Co., Hamilton, Ohio, to whom all orders should be addressed.

[Written for the UNITED STATES MILLER.]

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A. J. SHAW.

III.

The ideal line shaft would be made in one piece of varying diameter, the strength at each point being proportional to the power to be transmitted. But while it is possible to make a shaft which shall fulfil these conditions, practical considerations relating to convenience in handling, and economy of manufacture, demand that it shall be made up of separable sections of convenient length. In practice these sections vary in length from eight to twenty feet. In cotton mills and other heavy timbered buildings, the length is determined by the length of the bays, and usually varies from twelve to sixteen feet.

An a most numberless variety of couplings have been devised for uniting these separate sections into one system, many of them worthless. But few varieties are in general use, or are at all known outside of the localities in which they were invented.

The flange coupling shown in Fig. 1, while expensive, clumsy and possessing many defects, is, probably more universally used than any other form. It has the merit of not requiring special machinery for its production, and consequently, comes within the capacity of any small shop. It also possesses the merit (dear to the average shop owner, who sells machinery of this class by the pound, of being able to absorb a great weight of iron without showing by its appearance, signs of undue congestion.

When well made and fitted, it is extremely rigid, the joint being perhaps the strongest part of the line.

The most serious disadvantages of the flange coupling, are: that each half must be fitted separately to its own section of shafting, keyed up in place and turned true; that it can be transferred to no other part of the line, and even if taken off from, and rekeyed on its own seat, is apt to be untrue.

To put pulleys on line shafting fitted up with flange couplings, is a comparatively slow and difficult piece of work. The bolts connecting the two halves must be driven out, the whole line moved endwise far enough to allow the centering fit to be drawn out, the key driven out, and the coupling driven off the shaft with a sledge or pulled off with a jack. For light shafting this operation not unfrequently results in springing the shaft. It is difficult to avoid hitting the shaft with the sledge, and even when the shaft is quite heavy a very few blows will bend it sufficiently to throw it appreciably out of truth.

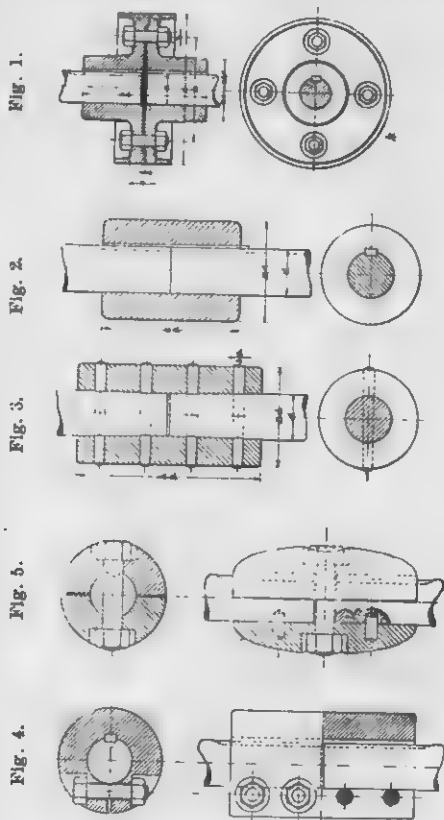
With all these disadvantages, the flange coupling has a strong hold and will probably find a sale for years to come.

There are no generally accepted rules for the proportions of the flange coupling, each draftsman or pattern-maker following his own ideas as to what it should be, which results sometimes in strange monstrosities. They are made with, and without outside flanges, with many small bolts and few large ones, with hubs and webs of all thicknesses.

A set of proportions which has been found to work well in practice and which is fairly economical in material, is given below, the reference letters being given in Fig. 1. The unit to which the dimensions are referred is d , the diameter of the shaft. The diameter of the hub is noted in the sketch.

The number of bolts may be the nearest even number to the diameter of the shaft in inches + 3. For instance, if the shaft diameter be 1 15-16", the number of bolts would be $3 + 1 \frac{15}{16} = 4 \frac{15}{16}$ the nearest even number to which is 4.

The diameter of the bolts, b , may be found by dividing the diameter of the shaft by the number of bolts and adding $\frac{1}{8}$ ". The outside diameter of the coupling, D , is determined by the necessity of having sufficient room for the bolt heads between the hub and the outer flange. This space should not be less than four or five times the diameter of the bolt. It will usually be sufficient to make the outside diam-



In Fig. 1,
 d = diameter of shaft.
 b = diameter of bolts.
 B = diameter of bolt circle.
 T = total thickness of both coupling flange.
 Diam. of hub = $2d$, to $2\frac{1}{2}d$.
 Length of hubs, over all = $4d$.
 S = depth of centering fit, which may be either inside or outside the bolt circle, as preferred.

In Fig. 3, the diameter of the taper pins equals "diameter of shaft" + $\frac{1}{4}$ ".

eter, D , from five to six times the diameter of the shaft, using the larger multiplier for small shafts.

The diameter of the bolts circle, B , should be such as to locate the bolts equi-distant between the hub and the flange.

The thickness of the webs, T , may be two-thirds the diameter of the shaft + $\frac{1}{8}$ ".

S may be from $\frac{1}{8}$ " to $\frac{1}{4}$ ", according to the size of the coupling.

For shafts in machines, which do not frequently require to be disconnected, an excellent and cheap coupling is shown in Fig. 2. It is a plain sleeve bored to a driving fit on each shaft, and fastened with a single key, or in some cases with a key at each end. The proper proportions are given in the cut.

A coupling much used in the shoe-manufacturing districts of New England is shown in Fig. 3, which is given principally as an example of "how not to do it." It is expensive, hard to disconnect, not interchangeable, and has but little driving power. Each end of the shaft is turned taper, usually to a taper of an half-inch to the foot, and on this end the coupling is driven, pin holes put through, and taper pins fitted. A scale of proportions is given in the cut, for the benefit of any who may desire to use this coupling, but the writer would say: don't.

A form of coupling which cannot be excelled for durability, convenience and simplicity, is shown in

Fig. 4. It consists of a plain sleeve or muff, split at one side, the split drawn together by four bolts, with a key on the side of the hole opposite the split. Its only drawback is that to ensure its success, the shafts must be very nearly the same size, the permissible variation being not over one or two thousandths of an inch. But as there is now no difficulty in obtaining shafting which comes within this limit, the objection has not much weight.

The length of the coupling should be four times the diameter of the shaft.

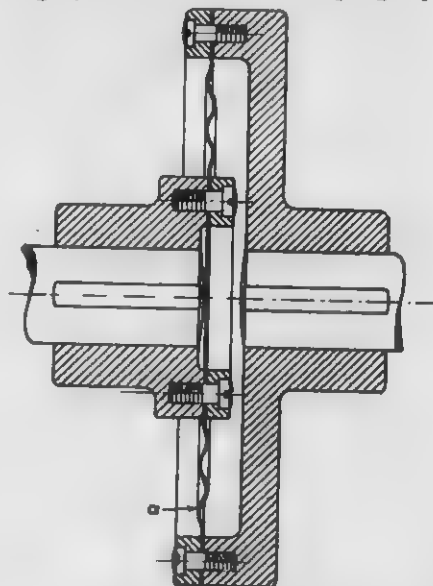
The diameter of the coupling may be three times the diameter of the shaft + $\frac{1}{8}$ ".

The diameter of the bolts may be found by dividing the diameter of the shaft by 4 and adding $\frac{1}{8}$ ". They should be placed as near the shaft as possible. Fitted bolts are not necessary.

Another form of coupling called the "egg" coupling has been highly recommended by some, but the writer cannot say from personal experience whether it is good for heavy continuous work. It is extremely simple and compact, and if able to stand up to its work is an excellent coupling. It is shown in Fig. 5. It would require special jigs for drilling the pin holes on the upper side, but further than this could be made without special tools. For light work it would probably be successful.

IV.

In many situations a rigid coupling such as shown in the last article is inadmissible, especially for very large shafts, which are liable to fracture if not in exact or nearly exact alignment. To meet these conditions the "Brotherhood" flexible coupling, shown in Fig. 6, was devised. This coupling is pat-



(FIG. 6.)

ented in England, and may be in this country, although as to this the writer is not sure. In this coupling, one of the shafts is provided with a large recessed flange, to which is rigidly clamped the outer periphery of a corrugated wrought iron or steel plate D , the inner edge of which is clamped to a center keyed to the other shaft. This corrugated plate is somewhat flexible, and on account of its elasticity allows some variation in the alignment of the two shafts, while at the same time giving a positive and non-elastic drive. This coupling has come into somewhat extensive use for the propeller shafts of ocean steamers, which have broken in many instances on account of the variations of alignment and irregular bending strains to which they are subjected in a heavy sea, when even the stoutest hulls change their shape, to a greater or less extent. Of course the change in direction allowable with this coupling is very small. It is not intended to take the place of a universal joint, but only

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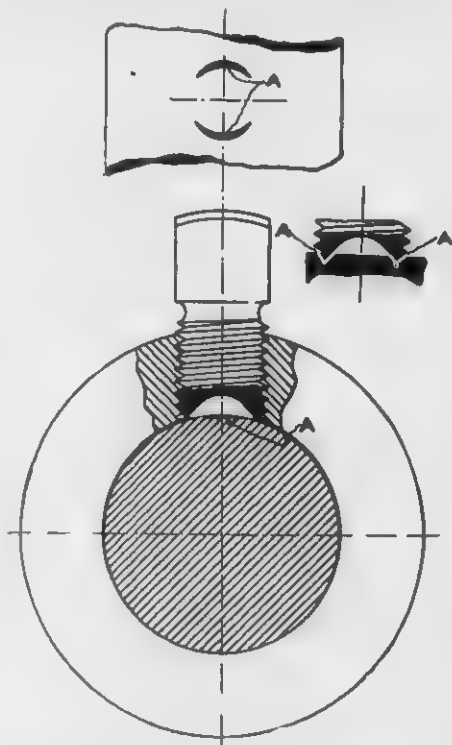
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to allow the settlements and changes of alignment which are likely to take place through settlement of foundations, etc.

It is a very common belief among mechanics and millwrights, a belief in which the writer used to share, that a "cupped" set screw has more holding power than a set screw with a round or oval point. On shafts of very large diameter, compared with the diameter of the set screw, this may be true; but for the proportions of shaft and setscrews usual for line and counter shafts, it is entirely incorrect. That this is the case will be instanced by the following:

A firm with which the writer was at one time engaged as superintendent, had fitted up a large cotton mill with line-shafting, pulleys, hangers, and other general mill work. In accordance with their usual practice, the pulleys were fitted with case-hardened cup-pointed set screws. Soon after starting up the mill, complaints began to come in that they could not make the pulleys hold on the shafts. Of course the natural remedy was to put in more set screws, so that the pulleys which had been at first provided with one set screw, were fitted with two, and as many of the pulleys with two set screws slipped, some of them were fitted with four, spaced "quartering" with those first put in and still the pulleys would not hold. It should be stated that the shafting was rather small, and that the pulleys were many of them of large diameter.

An examination of the shafts revealed the fact that they were badly scored, as



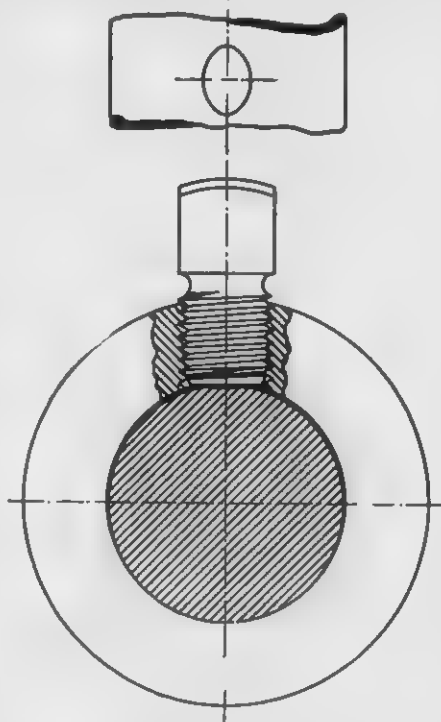
(FIGS. 7 AND 7A.)

would, of course, be the case, and that the scores were, in nearly every case, two parallel grooves, corresponding to the width across the "cup" of the set screws. The grooves were very narrow and had the appearance of the groove made around a pipe by the first two or three turns of a pipe cutter. It was concluded that the trouble was due to insufficient bearing surface on the point of the set screw, and oval pointed set screws were substituted. These gave trouble in very few

cases, and were finally adopted throughout the mill, instead of those first put in.

The difference in the mode of action of the two types of screws may be seen by reference to Figs. 7 and 8.

Fig. 7 is a cross section of a shaft and pulley hub with a cupped point set screw. If the shaft were a flat surface, the ring which forms the cup would bear throughout its entire circumference, and in that case the screw would have great holding power. This would be the case, approximately, with shafts of very large diameter. But in the case before us, the set screw bears only at two points, as shown at A, Fig. 7a. While these bearing marks have considerable surface, their greatest dimension is across the shaft, or in the direction of movement, while the section of the bearing, or indentation in the shaft caused by the point of the set screw, at right angles to the direction of slip, (on which section the resistance to slipping, except that due to friction on the back of the shaft, depends,) is very small, as is shown in the small section, at A A. From this it appears that the action of the set screw point is more like that of a pipe cutter or cutting off tool than anything else, and that unless the set screw is set up so hard as to hold the pulley by friction at the back, resistance to slipping will be very small. How much different the action of an oval pointed set screw is, is shown in Figs. 8 and 8a. The



(FIGS. 8 AND 8A.)

impression made in the shaft by the oval, has its greatest diameter parallel to the shaft, or at right angles to the direction of the tendency to slip. If slip takes place, the set screw must burnish down the surface of the shaft for a width equal to the long diameter of the oval. How much more power this will take than in the first case is apparent from simple inspection.

The set screws should not be too much rounded, as in that case the length of the oval will be small, and the action will approach more nearly to that of the cupped point. The writer's experience has been that the radius of the point should be from one to two times the diameter of the set screw.

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- No.
375,496—Grain Separator, John Grider, Stockton, Cal.
375,533 and 375,534—Grinding Mill, Henri H. Coles, Philadelphia, Pa.
375,515—Grain Weighing Apparatus, Leroy C. Tryon, Marseilles, Ill.
375,612—Machine for Scouring Wheat, Francis M. Drake, Waldo, O.

JANUARY 3, 1888.

- 375,782—Middlings Purifier, Heman W. Stone, Jr., Morris, Minn.
375,931—Conveyer, Winfield O. Gunckel, Terre Haute, Ind.
376,023—Roller Mill, Herman A. Barnard, Moline, Ill.
376,044—Grain Scale & Register, Lester Reynolds, Yreka, Cal.

JANUARY 10, 1888.

- 376,232—Feed Mill, Thos. C. Cadwgan, Springfield, O.
376,157—Grain Separator, Nils Nilson, Minneapolis, Minn.
376,367—Rotary Grain Measure, James R. Busenbarreck and Geo. F. Mitchell, Robinson, Kan.
376,357—Water Wheel, James N. Weeks, Warren, N. Y.

JANUARY 17, 1888.

- 376,532—Screw Conveyer, Ludwig Rossler, Aibling, Bavaria, Germany.
376,626—Rice Hulling Machine, John D. Belton, New Orleans, La.
376,679—Automatic Grain Scale, Michael E. Reiser, Hennes, Germany.
376,712—Machine for Splitting Grain, Louis Gathmann, Chicago, Ill.

JANUARY 24, 1888.

- 376,965—Grain Weighing Apparatus, Michael E. Reiser, Hennes, Prussia, Germany.
376,943—Flour Bolt, John M. Cook, Baltimore, Md.

JANUARY 31, 1888.

- 377,120—Drive Chain, Frederick F. Schofield, Osoda, Mich.
377,121—Drive Chain, David J. Sheldrick, Columbus, O.
377,139—Driving Mechanism for Elevators, Joseph F. Bower, Des Moines, Ia.
377,278—Grain Measuring Apparatus, Andrew J. Simpson, Morrow, O.
377,158—Grain Tally, Robert E. Howell, Minneapolis, Minn.
377,163—Grain Weighing, Registering and Bagging Machine, Geo. R. Rendrick, Bryant, Ind.
377,292—Scale for Weighing Grain, John Dable, Chicago, Ill.

FEBRUARY 7, 1888.

- 377,552—Drive Chain, William D. Ewart, Chicago, Ill.
377,572—Drive Chain, Frederick H. C. Mey, Buffalo, N. Y.
377,710—Dust Collector, Orville M. Moore, Jackson, Mich.
377,370—Alarm for Flouring Mills, Alfred J. Buie, St. Louis, Mo.
377,518—Magnetic Separator, Thomas A. Edison, Llewellyn Park, N. J.
377,438—Automatic Grain Scale, Chas. A. Lieb, New York, N. Y.
377,608—Automatic Grain Scale, Chauncey B. Forward, Cleveland, O.
377,883—Electro Magnetic Grain Weighing Scale, Wm. A. Holley and Ulrik Malin, Holland, Mich.
377,417—Automatic Grain Weigher, Edgar C. Willy, Independence, Va.
377,423—Grain Weighing, Bagging and Registering Device, Wm. H. Grove, Circleville, O.
377,513—Device for Weighing and Sacking Grain, Chas. E. Cole, Summerville, N. J.
377,591—Automatic Grain Weighing Apparatus, Edwin E. Whitney, St. Johnsbury, Vt.

FEBRUARY 14, 1888.

- 377,811—Drive Chain, Sylvanus D. Locke, Hoosick Falls, N. Y.
377,831—Conveyer, Aaron Wissler, Brunnersville, Pa.
377,843—Automatic Grain Meter and Register, J. Gregory Wolfe, Melville, Ia.
377,917—Grain Elevator, Thos. J. Underwood, Decatur, Ill.
377,919 and 377,920—Grain Scouring Machine, Basie W. Welch, Baltimore, Md.
377,936—Automatic Grain Measure, Chas. W. Hadley, Owatonna, Minn.
377,762—Millstone Feeder, Louis E. Kane, Cincinnati, O.

FEBRUARY 21, 1888.

- 378,173—Drive Chain, Benjamin Oborn, Columbus, O.
378,139—Chain for Conveyers—Benjamin A. Legg, Columbus, O.
378,363—Automatic Grain Scale, Joseph Guidinger, Hika, Wis.

FEBRUARY 28, 1888.

- 378,652—Separating Machine for Cleaning Groats, Emil Weiss, Berlin, Germany.
378,599—Drive Chain, Benjamin A. Legg, Columbus, O.
378,786—Flour Bolting Reel, Washington Gilleland, Land, Pa.
378,808—Apparatus for Treating Cereals, Henry E. Robbins, Jr., Baltimore, Md.

MARCH 6, 1888.

- 379,115—Drive Chain, C. William Krause, Chicago, Ill.
379,155—Middlings Purifier, Wm. J. Fender, Jackson, Mich.

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381,522—Millstone Dress, Joseph Bachulein, Cincinnati, O.
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381,710—Roller Mill, Jonathan D. Mawhood, Richmond, Ind.
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MAY 1, 1888.

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383,126—Automatic Grain Weigher, John Henry, Ardooch, Dak.
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383,166—Grain Separator, Gurdon B. Bailey, Council Bluffs, Iowa.
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383,285—Rice Hulling Machine, Evaristo Conrado Engelberg, Piracicaba, Brazil.
383,291—Water Power, Abram Gustilo, Boone, Iowa.
383,300—Automatic Grain Meter, Jacob C. King, York, Pa.

MAY 20, 1888.

383,556—Conveyor, Amos H. Brainard, Hyde Park, Mass.
383,801—Dust Arrester and Collector, Robert L. Downton, St. Louis, Mo.
383,827—Grain Cleaning Cylinder, Wm. P. Clifford, Ottumwa, Iowa.
383,749—Centrifugal Grain Drying Machine, Frederick Mel' eraman, St. Charles, Mo.
383,777—Turbine Water Wheel, S. Morgan Smith, York, Pa.

JUNE 5, 1888.

384,130—Bag Fastener, Henry W. Comstock, Lafayette, Ind.
384,104—Bag Holder, Isaac H. Weaver, Toledo, O.
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384,056—Separating Machine, Andrew J. Miller, Arion, O.

JUNE 12, 1888.

384,454—Bag Holder, Wm. F. Lewis, Washington, D. C.
384,530—Bolting Reel, David L. Hamaker, Chambersburg, Pa.
384,352—Flexible Grain Tube, Thos. W. Emory, Minneapolis, Minn.
384,406—Roller Mill, Walter W. Westrup and Geo. T. Lautaff, Lookport, N. Y.

JUNE 19, 1888.

384,656—Machine for Mixing Flour, Herman A. Weber and Johann G. Zeidler, Gorlitz, Germany.
384,861—Grain Separator, Frederick Melkersman, St. Charles, Mo.
384,949—Grinding Mill—Gaudenzio Zonca and Giuseppe, Hella, Venice, Italy.
384,645—Magnetic Separator, M. Holroyd Smith, Halifax, England.
384,912—Roller Mill, Jonathan D. Mawhood, Richmond, Ind.
384,950—Separating Machine, Noah W. Holt, Manchester, Mich.
384,988—Toll Register, John K. Stewart, West Mansfield, O.
384,833—Water Wheel, Adam George and Wm. Klein-dinst, Buffalo, N. Y.
384,916—Current Water Wheel, John H. Knight, Buffalo, N. Y.
384,657—Automatic Weighing Machine for Grain, DeWitt West, Tampico, Ills.

JUNE 26, 1888.

385,037—Dust Collector, Joseph S. Ash, Canal Winchester, O.
385,362—Dust Collector, Chas. M. Hardenbergh, Minneapolis, Minn.
485,175—Flour Mill, James J. Faulkner, Jackson, Mich.
385,036—Grain Cleaner, Joseph S. Ash, Canal Winchester, O.
384,983—Grain Meter, George H. Kamman, Champaign, Ills.
385,085—Grinding Mill, Milo J. Althouse, Waupun, Wis.
385,261—Means for Utilizing the current force of running water, Charles M. Garrison, Wichita, Kan.
385,280—Water Wheel Governor, James Morton, Quidnick, B. I.
385,237—Wave Power Motor, Felix Starkenberg, Milwaukee, Wis.

JULY 3, 1888.

385,420—Roller Mill, Jonathan D. Mawhood, Richmond, Ind.
385,427—Grain Separator and Grader, Elijah N. Pugh, Willis, Kan.
385,532—Machine for Weighing Grain, Louis H. Solon and John McMahon, Mendota, Ills.
385,563—Grain Separator, Edwin C. Manning, Washington, D. C.

JULY 10, 1888.

385,870—Process of Hulling, Cleaning and Separating Grain, Frederick Melkersman, St. Charles, Mo.
385,899—Dust Collecting Machine, James B. All'ree, Indianapolis, Ind.
386,014—Grinding Rolls for Flour Mills, Henry A. Huefner, Palmer, Ills.
386,037—Dust Collector, Heinrich Seck, Dresden, Saxony, Germany.

JULY 17, 1888.

386,255—Current Motor, Michael McCarty, Montrose, Colo.
386,371—Corn Sheller, Henry A. Adams, Sandwich, Ills.

JULY 24, 1888.

386,655—Coal and Grain Distributing Machine, Geo. H. Ramsay, Excelsior, Iowa.
386,695—Grain Measuring and Registering Device, Friedrich H. Ehlers, Montevideo, Minn.
386,745—Automatic Grain Meter, John Henry, Ardooch, Dak.

JULY 31, 1888.

387,057—Centrifugal Reel, Zenas C. Eldred, Jackson, Mich.
387,061—Drive Chain, Benjamin A. Legg, Columbus, O.
387,008—Drive Chain, Benjamin F. Orton, Philadelphia, Pa.
386,959—Flour Bolting Machine, Carl Bostel, Cleveland, O.
387,001—Grain Measuring Spout, John B. McCutcheon, Battle Creek, Mich.
387,154—Grain, Flour and Feed Scale, Joseph B. Dutton, Detroit, Mich.
386,802—Water Wheel, Edwin M. Carhart, Providence, R. I.

AUGUST 7, 1888.

387,241—Conveyor, Geo. W. McCaslin, New York, N. Y.
387,477—Dust Collector, Barnim F. Orman, Buffalo, N. Y.
387,304—Grain Separator, Geo. C. Beeman, Minneapolis, Minn.
387,267—Grinding Mill, Geo. Raymond and Albert Raymond, Chicago, Ills.

AUGUST 14, 1888.

387,573—Bolting Reel, Geo. A. Gilbert, Milwaukee, Wis.
387,330—Conveyor, James F. Simmons, Manistique, Mich.
387,617—Dust Collector, Joseph S. Ash, Canal Winchester, O.
387,955—Middlings Purifier, James Huxtable, Horning's Mills, Ont., Canada.
387,796—Middlings Purifier, Victor Mounier, Dundas, Minn.

AUGUST 21, 1888.

388,026—Centrifugal Reel, William B. Dunlap, Cincinnati, O.
388,194—Conveyor, William Grieser, Chicago, Ills.
388,082—Corn Sheller, Alex. R. Montgomery, Deatur, Ills.

AUGUST 28, 1888.

388,641—Means for operating the Slides of Grain Hoppers, John Dabie, Chicago, Ills.
388,661—Roller Grinding Mill, William D. Gray, Milwaukee, Wis.
388,730—Roller Mill, Alpheus J. Shontz, Bloomville, O.
388,591—Current Water Wheel, Leander Colt, Suspension Bridge, N. Y.

NEWS.

A 25-bbl. mill is being built at Treadway, Tenn., by W. L. McCoy. —Henville Minn., has a bonus of \$2,000 awaiting some enterprising party who will build a 50-bbl. mill at that place. Wilford & Bro. are building a 75-bbl. roller mill at Oakland, Ky.—J. D. Reeves, whose mill at Newark, N. J., was recently burned, will rebuild.—Randolph & Son, are about to invest \$15,000 in a roller mill at Newport, Tenn.—The Albert Lea Co. of Albert Lea, Minn., are about ready to start up their new 250-bbl. mill.—The mill of Dawson & Ross has been removed from Factoryville Neb. to Cloverdale, Cal.—A 75-bbl. roller mill has been completed at Murrayville, Ky., by Holland Bros. & Hay.—A company has been incorporated at Lander, Wyo. Ter., with a capital stock of \$15,000, to erect a roller mill.—C. P. Wetherby has sold his mill at Meridian, Miss., to J. R. Hood.—A company has been incorporated at Weatherford, Tex., under the name of The Parker County Roller Mill Co., with a capital stock of \$50,000.—The Watertown Mill Association of Watertown Minn., has been incorporated with a capital stock of \$10,000.—The Watson Mills at Fayette Me., have been purchased by McInnis & Leighton.—The Getty & Larkin Mill and Elevator Co. has been incorporated at Ellsworth, Kan., capital stock \$50,000.—The Portland Mills Co., are about to build a 1,000-bbl. mill at Tocomo, W.T.—W. Ransom of Winchester, Tenn., has let the contract for a 50-bbl. roller mill to be built at that place.—A. J. Kern is building a 50-bbl. roller mill at Slatington, Pa.—A 50-bbl. roller mill is being fitted out at Dodge, Neb., by Milligan & Robineck.—John Williamson is building a 30-bbl. roller mill at Liverpool, Pa.—F. C. Winants is building a 40-bbl. mill at Freeport, Kan.—A 50-bbl. mill is being built at Sunbury, Pa., by Hiram Hass.—J. M. Kimble is building a 30-bbl. roller mill at Pardo, Pa.—The 30-bbl. mill at Menallen, Pa., owned by C. Dear-dorf, recently destroyed by fire, is being rebuilt.—A Munger & Son, Malone, N. Y., are increasing the capacity of their mill to 60 bbls.—Jefferson & Jones are fitting out a 50-bbl. roller mill at Cadiz, Ky.—A 75-bbl. roller mill is being built at Franklin, Idaho, by James Mack.—F. Fred. Garey is building a 50-bbl. roller mill at Denton, Md.—Wm. Greek is building a 50-bbl. roller mill at Kunkle, O.—

The American Mill Co. of Nashville, Tenn., have completed their 1,000-bbl. mill.—A company has been incorporated at Fennville, Mich., to build a 50-bbl. roller mill; officers: J. T. Dickinson, pres., W. W. Hutchins, sec., J. E. Hutchinson, treas.—The flour mill of C. Houser & Son at Altoona, Pa., was recently burned; loss \$25,000.—The mill at Brazil, Ind., known as the City Flouring Mills was burned recently; loss \$18,000.—W. A. Dean & Co.'s mill at Scranton, Pa., lately burned; loss \$7,000, insurance \$4,500.—The mills of Stapp Bros., at Henderson, Ky., were lately destroyed by fire. Loss \$14,000; insurance \$3,000.—The 125-bbl. mill at Rockton, Ill., owned by J. S. Feakins, was recently destroyed by fire, causing a loss of \$12,000; partially insured. The mill of the Ellsworth Milling Co., at Ellsworth, Ind., was burned Aug. 16th, together with nearly all the machinery, and a considerable quantity of flour and grain, causing an estimated loss of \$35,000; insurance \$18,000.—Voges & Kreipke's mill, known as the Bunker Hill Flour Mill at Evansville, Ind., was lately burned, together with 500 bbls. of flour, 100 tons of bran and a considerable quantity of wheat; loss on mill and machinery estimated at \$50,000; insurance from \$12,000 to 20,000. The mill had a capacity of 300 barrels per day.—Isaac May of the firm of Elsas, May & Co., Atlanta, Ga., manufacturers of flour bags, died Aug. 27, aged 45.—Wm. Peyton of Guthrie Centre, Ia., a member of the firm of Peyton & Mitchell, millers, is dead.—Crow & Young, millers at Alexander, Tex., have sold out.—Galloway & Reed of Canova, Dak., are building a 50-bbl. mill at that place.—The Alliance Milling Co., of Dallas, Tex., lately bought out the the milling business of S. H. Cockrell & Co.—H. C. Wheeler & Co.'s flour and corn mill, located near Booneville, Ky., lately burned; loss \$4,000.

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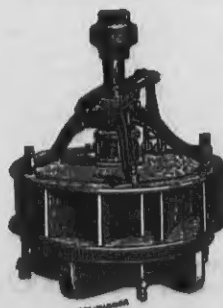
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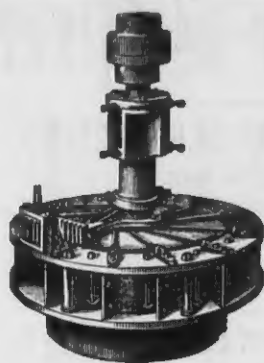
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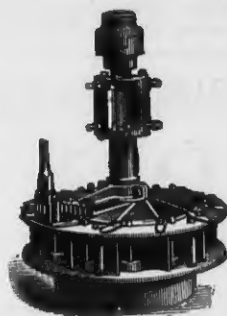
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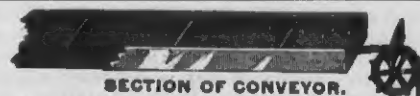
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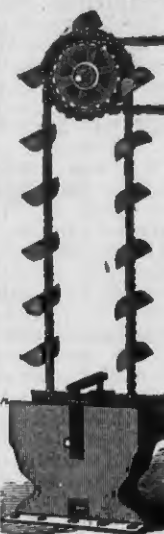
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These trees will commend themselves to every owner of Laboring Horses, for the reason that the load is constantly balanced on the spring, making it impossible for the horse, harness or wagon to receive any sudden shock or jar. Some of the benefits derived from their use are as follows:

Prolongs the Life of the Horse; Prevents Sore Shoulders, Stiffness of Limbs, Reluctance in Pulling and Destruction of Harness.

Send for Catalogue and Prices.

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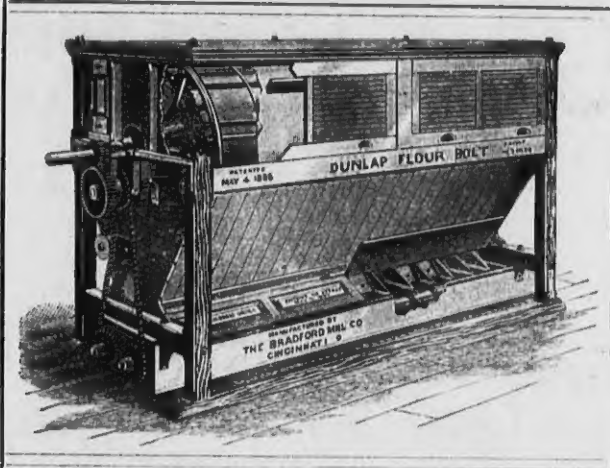
THE JEFFREY MFG. CO.

169 E. 1st Ave., COLUMBUS, O., U. S. A.

[Jan. 89.]

THE DUNLAP BOLT

"A Great Acquisition to Milling."



The New 1600-Barrel Mill on Staten Island, N. Y., will have 52 of these Reels to do all its Bolting.

HUNGARIAN ROLLER MILL CO.,

BLOOMINGTON, ILLS., September 14th. 1888.

THE BRADFORD MILL CO., Cincinnati, Ohio.

GENTLEMEN: I have had your DUNLAP REEL in operation about 15 days and nights, and on new wheat which was very soft, and it has accomplished its work admirably; greatly exceeded my expectations. I have operated quite a variety of Reels, but have to say the DUNLAP surpasses any I have ever seen or used.

It gives me pleasure to state that its work has given entire satisfaction, and moreover, am surprised at its close separation, capacity and light running. The Dunlap Reel can certainly be considered a great acquisition to milling.

I to-day forward you, per mail, samples of material upon which your Reel is working.

Yours truly,

A. G. BEOBOLD,

Head Miller Hungarian Roller Mill Co.

THE BRADFORD MILL CO.

CINCINNATI, OHIO.

BODMER BOLTING CLOTH

CELEBRATED FOR

STRENGTH, DURABILITY AND EVENNESS OF MESH.

THIS CLOTH HAS STOOD THE TEST OF YEARS AND HAS NEVER FAILED TO GIVE SATISFACTION. ONCE USED NO OTHER BRAND WILL BE ACCEPTED.

CLOTHS MADE IN A PERFECT MANNER AND SURE FIT GUARANTEED. WE HAVE BEEN APPOINTED SOLE AGENTS IN CHICAGO FOR THE BODMER BOLTING CLOTH. WRITE FOR DISCOUNTS, ETC.

179 PARK AVENUE, RYER & CO., CHICAGO, ILL.

PRINZ Patent Improved Cockle Machine.

The Most Durable, Simple and Efficient Machine for the purpose on the market.

CENTENNIAL MILLS,
EVANSVILLE, IND., June 14, 1887.
FAUSTIN PRINZ & CO., Milwaukee, Wis.

GENTLEMEN:—Enclosed please find check in payment of Cockle Machine sent us May 28, 1887. The Machine does its duty.

May 23rd, 1888.
The Cockle Machine you sold us a year ago is doing its work as well now as it did in the start and has not cost us a dime for repairs yet.

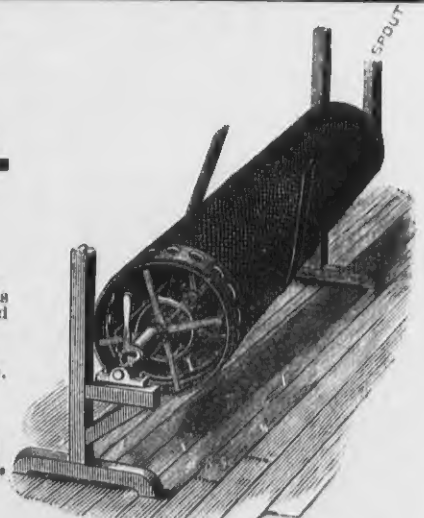
Respectfully yours,
J. W. LAUBSCHER & BRO.

MANUFACTURED IN FOUR SIZES.

FAUSTIN PRINZ & CO., MILWAUKEE, WIS.

Write for Descriptive Pamphlet.

[Please mention this Paper when you write.]

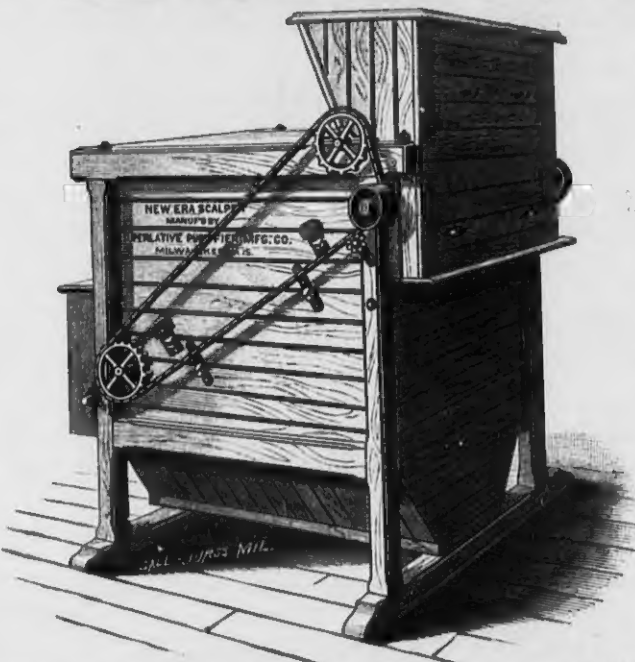


The Superlative Purifier. **A REVOLUTION IN MILLING!** The Superlative Bran Duster.

NEW ERA SCALPER

No Scouring

-OF-

BRAN OR MIDLINGS.**SMALL SPACE**One Machine will do all the Scalping
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White as any in the Mill.**Immense Capacity.**One Machine will do the Scalping for
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SUPERLATIVE PURIFIER MFG CO., Milwaukee, Wis.

Gentlemen: * * * I tell you, the machine is a daisy Scalper. Too much praise cannot be said for it. It increases
our High Patent and our Bakers' Flour is so much less, and of better color and more granular, there being less wearing
and scouring of the product through the scalping process. Yours very truly,
BONUS & LOGAN.

Sheldon, Iowa, June 13, 1888.

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